REMARKS

Claims 23-56 are pending in the application. Claims 1-22 have been canceled and claims 23-56 have been added. Support for the new claims can be found, e.g., in original claims 1-7 and 12, and in the specification at page 7, line 30, to page 8, line 3; page 12, lines 24-28; page 19, line 27, to page 20, line 13; page 20, lines 14-25; page 32, lines 4-18; page 33, line 28, to page 34, line 4; page 36, lines 17-20; page 39, lines 1-4; page 39, lines 19-26; page 40, line 28, to page 42, line 31; and page 128, line 6, to page 130, line 5. These amendments add no new matter.

Allowable Subject Matter

At page 2 of the Office Action, the Examiner stated that claim 2 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form to include all of the limitations of the base claim. Claim 2 has been canceled. New claims 24-27 are directed to the subject matter of original claim 2 and are therefore believed to be in condition for allowance.

Restriction/ Election

Applicant appreciates the Examiner's agreeing to examine nucleotide sequences SEQ ID NO: 48 and SEQ ID NO:50 as well as nucleic acids encoding the polypeptide of SEQ ID NO:49. Original claims 1-22 have been canceled. Newly added claims 23-56 are all directed to the elected subject matter.

ATCC Deposits

At page 3 of the Office Action, the Examiner objected to claims 1-7 and 12 as reciting incomplete ATCC accession numbers. Claims 1-7 and 12 have been canceled. Newly added claims 52-56 recite complete ATCC accession numbers.

35 U.S.C. §112, Second Paragraph

At page 3 of the Office Action, the Examiner rejected claims 1, 3-7, and 12 as allegedly indefinite for their lack of a definition of stringent hybridization conditions. Claims 1, 3-7, and 12 have been canceled. New claims 34-37, 52, 55, and 56 recite specific hybridization and washing conditions as described in the specification at page 39, lines 19-26. In light of these amendments, applicant requests that the Examiner withdraw the rejection.

35 U.S.C. §112, First Paragraph (Written Description)

At pages 4-7 of the Office Action, the Examiner rejected claims 1, 3-7, and 12 as allegedly containing subject matter that was not described in the specification in such a way that one skilled in the art can reasonably conclude that applicant had possession of the claimed invention at the time of filing. According to the Examiner,

> SEQ ID NO: 48 (and therefore SEQ ID NO: 50 and sequences encoding SEQ ID NO: 49) meets the written description provisions of 35 USC 112, second paragraph. However, the claims are directed to encompass gene sequences, sequences that hybridize to SEQ ID NO:48, corresponding sequences from other species, mutated sequences, allelic variants, splice variants, sequences that have a recited degree of identity (similarity, homology), and so forth. None of these sequences meet the written description provision of 35 USC 112, first paragraph. The specification provides insufficient written description to support the genus encompassed by the claim.

Claims 1, 3-7, and 12 have been canceled and new claims 23-56 have been added. For the reasons provided below, applicant respectfully submits that all of the new claims meet the written description requirement.

(i) Nucleic Acid Encoding a Polypeptide Containing the CARD of CARD-5

As detailed in the specification in Example 17, applicant has carried out a mammalian two-hybrid screening assay and determined that the caspase recruitment domain (CARD) of CARD-5 binds to the CARD of caspase-1 (page 128, line 6, to page 129, line 13). The CARD of human CARD-5 extends from approximately amino acid position 111 to 181 of SEQ ID NO:49 (see, e.g., page 8, lines 1-3; page 36, lines 17-20; and page 125, lines 8-13).

Claim 23 is directed to an isolated nucleic acid comprising a nucleotide sequence that encodes a polypeptide that binds to caspase-1 and comprises amino acid residues 111 to 181 of SEQ ID NO:49 (CARD of CARD-5). The precise structural definition of the polypeptide encoded by the claimed nucleic acid ("comprising amino acid residues 111 to 181 of SEQ ID NO:49") allows the skilled artisan to readily envision the claimed invention and understand that applicant invented what is claimed. A nucleic acid encoding a polypeptide containing the CARD of CARD-5 is described in the specification at, e.g., page 36, lines 7-20. In addition, the application contains a working example of an expression vector encoding a fusion polypeptide that contains the CARD of CARD-5 and binds to caspase-1 (page 128, line 6, to page 129, line 13). In light of this disclosure contained in the application as filed, applicant respectfully submits that the nucleic acid of claim 23 satisfies the written description requirement.

(ii) Percent Identity

New claims 28 to 33 are drawn to a nucleic acid containing a nucleotide sequence that encodes a polypeptide that: (a) stimulates NF-kB activity (claims 28-30) or binds to caspase-1 (claims 31-33); and (b) contains an amino acid sequence that is at least 85% identical to the sequence of SEQ ID NO:49. The genus of nucleic acids encompassed by these claims does not have substantial variation, since all must encode a polypeptide that has a specified activity and contains a sequence that has at least 85% identity to SEQ ID NO:49. The CARD-5 nucleic acids disclosed in the specification are representative of the claimed genus because: all members of the genus encode a polypeptide highly similar to a reference sequence (SEQ ID NO:49); and the specification describes assays for identifying variants encompassed by the claim having the specified activity (such assays are described in the specification at, e.g., page 128, lines 10-26, and page 118, line 15, to page 120, line 5). In light of this disclosure, the skilled artisan would have concluded, at the filing of the present application, that applicant was in possession of the necessary common attributes possessed by the members of the genus.

The Examiner cited *Regents of the University of California v. Lilly & Co.*, 119 F.3d 1559 (Fed. Cir. 1997), a leading case on the written description requirement for nucleic acid molecules, in support of the present rejection. The discussion in *Lilly* regarding a proper written description for genus claims had to do with a claim drawn to a vertebrate mRNA encoding

insulin. The *Lilly* court held that a generic statement, such as the term "mammalian insulin cDNA" is not, without more, an adequate written description of an invention claiming the nucleotide sequence for human insulin. The court's decision in *Lilly* focused on functional claims directed merely to a desired result without structure: "[t]he description requirement of the patent statute requires a description of an invention, not an indication of a result that one might achieve if one made that invention." *Id.* at 1406. However, the *Lilly* court also took care to indicate that structural information about the claimed genus was different in kind than a mere desired result. The court indicated that in claims involving chemical materials such as proteins and polynucleotides "generic formulae usually indicate with specificity what the generic claims encompass. One skilled in the art can distinguish such a formula from others and can identify many of the species that the claims encompass. Accordingly, such a formula is usually an adequate description of the claimed genus." *Id.*

The present claims are drawn to nucleic acids structurally defined by their degree of identity to a reference sequence. The claims thus provide a precise definition of the invention by structure, as is required for an adequate description of a nucleic acid molecule. Moreover, the claimed nucleic acids are also defined by the recited function of the polypeptide encoded by the nucleotide sequence (i.e., the ability to stimulate NF-kB activity (claims 28-30) or the ability to bind caspase-1 (claims 31-33)). The claims are not directed to a desired result without structure, as was the case in *Lilly*. A person of ordinary skill in the art would clearly understand the structural definition of the nucleic acids provided by the claims and would therefore understand applicant to have been in possession of the claimed nucleic acids at the time the application was filed. Accordingly, applicant submits that the pending "percent identity" claims satisfy the written description requirement.

(iii) Hybridization

New claims 34-37, 52, 55, and 56 are drawn to a nucleic acid containing a nucleotide sequence that: (a) hybridizes to a reference polynucleotide sequence under defined conditions of hybridization and washing; and (b) encodes a polypeptide that stimulates NF-kB activity (claims 34, 35, 52, and 55) or binds to caspase-1 (claims 36, 37, 52, and 56). The specification

provides a description of the recited hybridization and washing conditions at page 39, lines 19-26.

Because the stringent hybridization conditions set forth claims 34-37, 52, 55, and 56 allow for the hybridization of only structurally similar nucleic acids, a person of ordinary skill in the art would not expect substantial variation among the species within the scope of the claims. Accordingly, the stringent hybridization conditions, in combination with the recited function of the polypeptide encoded by the nucleotide sequence (i.e., the ability to stimulate NF-kB activity (claims 34, 35, 52, and 55) or the ability to bind caspase-1 (claims 36, 37, 52, and 56)) as well as the level and skill and knowledge in the art, are adequate to cause the skilled artisan to readily understand that applicant was in possession of the claimed invention at the time of filing of the present application.

Similar to the discussion above with respect to the "percent identity" claims, the specification provides relevant identifying characteristics of the claimed nucleic acid molecules. Here, the identifying characteristic is a physical property of the claimed nucleic acid molecule, namely its ability to hybridize to a reference nucleotide sequence under a set of defined hybridization and washing conditions. The ability of a nucleic acid molecule to hybridize to a reference nucleic acid molecule under the defined conditions is dependent on the structure (sequence) of the nucleic acid molecule. The claims are not directed to a mere desired result without structure. Thus, the specification provides a written description of the claimed nucleic acid molecules that is in accordance with the standards set forth in *Lilly*. For these reasons, applicant submits that the pending "hybridization" claims satisfy the written description requirement.